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Passing the torch...

World Nuclear University Fellows gain new perspectives and renew their enthusiasm for nuclear energy and technology during the six-week WNU Summer Institute at Idaho National Laboratory.

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By any measure, the World Nuclear University's Summer Institute, conducted at Idaho National Laboratory over the past six weeks, was a success. This premier global event brought together 77 young nuclear leaders from 34 nations for intensive study, discussion and interaction on a wide range of nuclear issues and topics.

In the closing week, WNU Fellows heard United States Sen. Larry Craig give a wide-ranging address on the Energy Policy Act of 2005 - and its implications for nuclear energy research and development in America and the world.

"There's a reason INL is specifically written into the Energy Bill (just signed into law by President Bush)," Craig said. "INL has a legacy of quality - good work, good engineering, good productivity. With this bill, INL is at the epicenter of future energy technology.

"We'll have a lot of good people from all over the world who will come here and participate with us," he said. "Nuclear is a readily available technology that can produce an abundance of energy with no emissions. And there is a general understanding that the world does not want to be out of abundant energy."

Craig also addressed climate change, hydrogen and fuel-cell technologies, and the need for reprocessing of nuclear fuel.

"We're putting \$4 billion per year into climate change technology - today," he said. "That's every year - and that's more than the rest of the world combined."

He said America's research in nuclear energy and climate change technology will be shared. "What we do, we do for ourselves, but also for the world," he said. "That technology will be made available to other countries, and it will benefit all countries."

With increasing concern about global warming and atmospheric carbon emissions, more and more nations are committing to greater reliance on nuclear power - at present the only megascale, emissions-free energy source for basic electricity production.

INL hosts the world

INL hosted the Summer Institute as part of its leadership role in advancing nuclear science and technology for America and the world. Among the Institute's goals:

- Creating lasting bonds among nuclear professionals from many nations
- Inspiring participants to commit themselves to advancing the global contributions of nuclear science and technology

Roy Freud, WNU Fellow from Israel, put it this way: "I won't exaggerate in saying that WNU Summer Institute was a once-in-a-lifetime experience." Freud, a reactor operator at Nuclear Research Center - Negev, learned leadership from some of the world's top nuclear professionals. And before the Summer Institute concluded, he had demonstrated that leadership in a special way (see "[World Nuclear University Fellow builds global ties with isotope donation](#)").

And he was not alone in his satisfaction with the six-week course. "WNU was very useful for me - most useful was the opportunity to communicate with other students from other countries," said Andre Chernoknizhnikov of Russia. "I am very interested in the technical aspects of nuclear power."

Global problem - global solution

As knowledge of global warming increases, many nations have chosen nuclear as a common-sense approach to reducing carbon emissions.

"Our government is concerned about climate change," said Chernoknizhnikov. "We depend on the snow. It's a problem from the agricultural side, and also from the Kyoto Protocol point of view. Our carbon emissions are not as great as the U.S. or Western Europe, because since the breakup of the Soviet Union, we have less industrial production."



U.S. Sen. Larry Craig (right) addresses an audience of World Nuclear University Fellows at University Place in Idaho Falls. (INL photo)

Mainland China plans to build at least 10 new nuclear plants, increasing its nuclear electricity production capacity fivefold by 2020. On Taiwan, six advanced nuclear power reactors operate - and two more are under construction.



WNU student Andre Chernoknizhnikov

"Nuclear power has big potential," said WNU Fellow Igor Vukovic of Croatia. "Oil and gas prices are rapidly increasing and that trend will continue. Oil and gas are concentrated in a few places in the world. This is a big opportunity for nuclear. It's clean technology compared to fossil fuels. The organizers of WNU did their best, I would say. The lectures were excellent."

'Necessary for the future'

"Egypt has no nuclear power plants, but only plans," said WNU Fellow Mohamed Gaheen. "It is an advantage to know the comparison between nuclear and other energy sources as the climate changes."

"Nuclear power is necessary for the future, not only for production of electricity, but to develop our industrial power," Gaheen said. "It's a good investment for our national life. The nuclear plant site has been selected and characterized - it's very important to build a nuclear power plant."

India, with 14 operating nuclear plants, has eight more under construction. In fact, since the year 2000, 47 nuclear plants have come online or begun construction around the world - most in Asia. Yanev is pleased to see that growth.

"Everybody knows it will be good to get there (resurgence of nuclear power providing needed energy across the globe)," Yanev said. "It's how we get there that's the problem. There are developing countries - particularly China and India - whose economies are growing like crazy. People want to work and produce - and they need energy. They either will burn fossil fuels, or you help them with nuclear power and with renewables."

WNU arrived on the scene as the factors of worldwide interest and demand, environmental concerns and new national commitments to nuclear power were coalescing. One indicator is the nations represented at the Summer Institute: Argentina, Armenia, Brazil, Bulgaria, Canada, Chile, China, Croatia, Czech Republic, Egypt, Finland, Germany, Ghana, Hungary, India, Italy, Israel, Japan, Kazakhstan, Lithuania, Mongolia, Netherlands, Mexico, Romania, Russia, Slovakia, Slovenia, South Africa, Sweden, Turkey, Ukraine, United Kingdom and the United States.



WNU student Mohamed Gaheen

'Appropriate human infrastructure'

Another indication of the growing importance of nuclear power is the WNU approach - building a network of young global nuclear leaders who can articulate the benefits of nuclear technology to their peoples and governments.

"To run such a heavily knowledge-loaded technology, you need an appropriate human infrastructure," Yanev said. "Not every country can do that. They can't afford to. For those nations which can and do participate, we have an excellent university group of very enlightened professionals. WNU is a political platform, but most of all it is a partnership - academia, industry, everyone is bringing to the table everything they have."

As part of their study, divided into teams, they worked closely with mentors and technical experts on numerous projects in the broad areas of nonproliferation, energy policy and nuclear cancer therapy.

Simply speaking, they got fired up. World Nuclear University charged their batteries with new enthusiasm for the peaceful use of atomic power - and renewed their vision of nuclear power's ability to help an energy-hungry world.

"This is an exceptional group of future world leaders of the nuclear enterprise," said James Lake, INL associate laboratory director for Nuclear Programs. "INL has been proud to contribute to this six-week Institute, and we are eager to host future activities of this kind. We all hope that the Institute Fellows have developed strong relationships with their peers from around the world that will serve them and us well in promoting the peaceful uses of nuclear technology in the future."



Dr. James Lake

At the conclusion of their strenuous summer studies, students reflected on the merits of the World Nuclear University and on the future of nuclear power.

"What is so interesting in WNU is to share the expert points of view, and see what happens in other countries - I think it opens your mind," said Myriam Valade. "In France, I will try to get more involved now in organizations (such as the student organization French Society for Nuclear Energy) to share this experience with other people."

At home, Valade is in charge of safety rules on core physical tests for nuclear reactors at Electricite de France - the main electricity generation and distribution company in France. Like the other WNU Fellows, she is going to spread the word about WNU - and about INL.

"I really loved to communicate with all the people from all over the world," said Cora Fischer, an AREVA employee from Germany. "It's nice for me to see other countries have a different approach (to nuclear power than that of Germany), especially that the United States is leading it."

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